AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A method for melting vitrifiable materials ~~(V)~~, in particular for the production of vitreous mosaic materials and ceramic frits as well as for the vitrification of waste, where the primary material must be frequently changed, comprising the following steps:

- providing a melting tank ~~(2)~~ having a floor ~~(4)~~ and side walls ~~(5)~~ made of refractory material for containing a molten bath ~~(3)~~, with a predetermined head ~~(B)~~ and at least one channel ~~(6)~~ for discharging the molten materials;

- introducing a primary batch of vitrifiable materials ~~(V)~~ into said tank ~~(2)~~ via an entry mouth thereof;

- providing, inside said tank ~~(2)~~, a plurality of electrodes ~~(9)~~ having a predetermined shape and length ~~(L)~~, said electrodes ~~(9)~~ having a substantially constant cross-section over their entire length ~~(L)~~ and being so positioned as to melt completely said vitrifiable materials ~~(V)~~ by means of diffused electric currents;

- depositing a covering layer ~~(C)~~ of vitrifiable materials ~~(V)~~ in the solid state onto the upper surface of said molten batch ~~(3)~~ so as to contain the dispersion of heat from the bath ~~(3)~~ and screen the crown ~~(13)~~ of the furnace;

~~characterized in that~~ wherein said ~~all~~ electrodes ~~(9)~~ are positioned so as to rest at the same level on said floor ~~(4)~~ over their entire length ~~(L)~~ to reduce to a minimum the head ~~(B)~~ of the molten bath ~~(3)~~, with a consequent reduction in the time required to change the primary batch and the power consumption.

2. (Currently Amended) The method according to Claim 1, ~~characterized in that~~ wherein the volume of the primary batch is limited by containing said head ~~(B)~~ within predetermined values depending on the diameter of the electrodes ~~(9)~~.

3. (Currently Amended) The method according to Claim 2, ~~characterized in that~~ wherein said head ~~(B)~~ is kept within values which are between twice and six times the average diameter of the electrodes ~~(9)~~, with said average diameter being between 1" and 2".

4. (Currently Amended) The method according to Claim 3, ~~characterized in that~~ wherein the floor ~~(4)~~ surface area of the melting tank ~~(2)~~ and the average specific gather of vitrifiable materials ~~(V)~~ are so selected that the power consumption is kept less than or equal to 0.6 kWh for each kilogram of glass produced.

5. (Currently Amended) An electric furnace ~~for implementing the method according to one or more of the preceding claims,~~ comprising:

- a melting tank ~~(2)~~ for containing a molten bath ~~(3)~~ with a floor ~~(4)~~, side walls ~~(5)~~, channels ~~(6)~~ for discharging the molten materials;

- means ~~(7)~~ for introducing into said tank ~~(2)~~ a primary batch of vitrifiable materials ~~(V)~~ and for depositing a covering layer ~~(C)~~ on the molten bath ~~(3)~~ having a predetermined head ~~(B)~~;

- a plurality of electrodes ~~(9)~~ situated inside said tank ~~(2)~~ so as to melt and keep in the molten state said vitrifiable materials ~~(V)~~ by means of diffused electric currents, said electrodes having an overall length ~~(L)~~ and a substantially constant cross-section over said length ~~(L)~~ and a predetermined position;

- ~~characterized in that said tank (2) further comprises~~ a crown ~~(13)~~ situated above said floor ~~(4)~~, all said electrodes ~~(9)~~ being so positioned inside the tank ~~(2)~~ to substantially rest at the same level on said floor ~~(4)~~ so as to reduce to a minimum the head ~~(B)~~ of the molten bath ~~(3)~~, with a consequent reduction in the time required to change the primary batch and the power consumption.

6. (Currently Amended) The furnace according to Claim 5, ~~characterized in that~~ wherein said electrodes ~~(9)~~ are substantially cylindrical and straight and are arranged substantially parallel to each other.

7. (Currently Amended) The furnace according to Claim 6, ~~characterized in that~~ wherein said electrodes ~~(9)~~ have one longitudinal and rigidly secured to a side wall ~~(5)~~ of the tank and the other longitudinal end in contact with the opposite side wall ~~(5)~~ so as to be slightly compressed or tensioned at the tip.

8. (Currently Amended) The furnace according to Claim 7, ~~characterized in that~~ wherein the ~~mutual~~ distance between said electrodes ~~(9)~~ is ~~determined~~ selected so as to optimize the distribution of the electric current inside the molten bath ~~(3)~~.

9. (Currently Amended) The furnace according to Claim 5, ~~characterized in that~~ wherein the side wall ~~(5)~~ of said tank ~~(2)~~ has a minimum height ~~(H)~~ which is greater than the maximum value of the head ~~(B)~~ plus the maximum thickness ~~(S)~~ of said covering layer ~~(C)~~.

10. (Currently Amended) The furnace according to Claim 9, ~~characterized in that~~ wherein said minimum height ~~(H)~~ of the side walls ~~(5)~~ of the tank ~~(2)~~ is between 35 and 60 cm with the diameter of said electrodes between 1" and 2 ½".

11. (Currently Amended) The furnace according to Claim 10, ~~characterized in that~~ wherein said minimum height ~~(H)~~ is ~~preferably~~ between 40 and 60 cm with the diameter of said electrodes ~~(9)~~ between 1" and 2 ½".

12. (Currently Amended) The furnace according to Claim 8, ~~characterized in that~~ wherein said discharge channels ~~(6)~~ extend in said floor ~~(12)~~ at least partially underneath the level of said electrodes ~~(9)~~ to prevent these latter from hindering the flowing out of the molten bath ~~(3)~~.

13. (Currently Amended) The furnace according to Claim 12, ~~characterized in that~~ wherein said discharge channels ~~(6)~~ comprise at least one main receiving canal ~~(10)~~ connected to the outside of the furnace by means of a discharge gully ~~(11)~~.

14. (Currently Amended) The furnace according to Claim 13, ~~characterized in that~~ wherein said discharge channels ~~(6)~~ comprise a plurality of secondary receiving canals ~~(12)~~ connected to said main canal ~~(10)~~.

15. (Currently Amended) The furnace according to ~~Claims 13 and 14~~ Claim 13, ~~characterized in that~~ wherein said main and secondary canals ~~(10, 12)~~ are transverse to each other and extend completely underneath said electrodes ~~(9)~~.